

# Effects of Four Levels of Applied Nitrogen on Three Fungal Diseases of Almond Trees

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## **Project Leader:**

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## **Objectives**

1. Determine the relationship between tree N status and the natural incidence of brown rot blossom and twig blight of almond and on infection of flowers and shoots by *Monilinia fructicola* and *M. laxa*.
2. Determine the relationship between tree N status and infection of green fruit of almond by *Botrytis cinerea*, *M. fructicola* and *M. laxa*.
3. Determine the relationship between tree N status and the natural incidence of hull rot of almond and on hull infection and leaf death caused by *M. fructicola* and *Rhizopus stolonifer*.

## **Summary**

The effect of four levels of applied N on brown rot blossom and twig blight, shot hole, scab, and hull rot diseases of almond trees were investigated. The diseases span the growing season from bloom through harvest and occur in all almond districts of the state. Brown rot, shot hole, and scab usually are effectively controlled by fungicide applications, and chemical control is not available or likely for hull rot. Cultural practices in general, and N fertilization in particular, are known to affect plant disease incidence and severity. Demonstration that N levels similarly affect almond diseases should encourage growers to include evaluation of their N practices when designing fungicide programs for disease control. Diseases not controlled by fungicides, such as hull rot, in part may be managed by changes in N fertilization.

The methods included inoculation of flowers (brown rot), young fruit (green fruit rot), and maturing, dehiscent fruit (hull rot) with the appropriate pathogens followed by measurement of the responses, and evaluation of natural incidence of diseases. All diseases responded similarly in that disease increased with increasing amounts of applied N. The results agree with that found in other plant systems, and further support the contention that excess N use can exacerbate disease problems and may compromise effectiveness of fungicides. These data should be useful in educational efforts directed at improving disease control and reducing N use.